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proper. *Eleotris pruvoti* is an ally of *Valenciennea* and *Eleotris balearica* approaches *Gymneleotris*.

DR. JACQUES PELLEGRIN publishes in the "Mission Scientifique," 1907, an account of the fishes of the high mountain lakes of South America.

IN a weekly Journal, the *Sydney Mail*, Mr. Charles Thackeray gives a readable and accurate account of the game fishes of New South Wales, with wood cuts of the leading species.

ECHINODERMATA

The Stalked Crinoids of the Siboga Expedition.¹—There has recently been published a monograph on the recent stalked crinoids of the East Indies, based on collections made by the *Siboga* which is the first important contribution to our knowledge of the group since the publication of Dr. P. Herbert Carpenter's great work (the *Challenger* report) in 1884.

The first thing to attract the attention of the student of the recent crinoids is the announcement of the discovery of the infrabasals in a species of *Metacrinus*, *M. acutus*, a new species here first described. Dr. Carpenter stoutly maintained that infrabasals did not occur in any species of recent crinoid, and he criticized rather sharply the so-called law of Wachsmuth and Springer, by the application of which the recent genera *Isoocrinus* and *Metacrinus* were shown to be dicyelic. He dissected numerous specimens of various species of both genera, and according to his statements and figures, appeared to conclusively prove their absence. In 1894 the Swiss paleontologist de Loriol discovered and figured infrabasals in a fossil species of *Isoocrinus*, and now Professor Döderlein shows their presence in *Metacrinus*. This discovery by Dr. Döderlein was made simultaneously by the present reviewer in two other species of *Metacrinus* and in *Isoocrinus decorus* and announced in a paper now in press, which had gone through the final proof before Dr. Döderlein's contribution was received. In this the infrabasals of *Metacrinus rotundus* from Japan and of *M. superbis* from the China Sea, and of *Isoocrinus decorus* from Cuba are described and figured.

¹ Die Gestielten Crinoiden der | Siboga-expedition | von | L. Döderlein. | Monographie XLIIa aus | Uitkomsten op Zoologisch, | Botanisch, Oceanographisch en Geologisch gebied | verzameld in Nederlandsch Oost-Indië 1899-1900 | aan boord H. M. Siboga onder commando van | Luitenant ter zee 1^e Kl. G. F. Tydeman | uitgegeven door | Dr. Max Weber.

The *Siboga* dredged stalked crinoids at seventeen stations, in all more than sixty specimens representing thirteen species and two additional varieties. Three of these species are referred to Bathycrinus, one to Rhizocrinus, two to Isocrinus, and the remainder to Metacrinus, while the species of Rhizocrinus dredged by the *Valdivia* off Somaliland and recorded by Chun in 1900 is included in the report, and figured under the name of *R. chuni*.

The species referred to the first two genera are of very exceptional interest, apart from the fact that neither genus has been recorded from the East Indian region; while the Rhizocrinus (*R. weberi* n. sp.) is related to *R. rawsonii* of the tropical Atlantic, the three Bathycrinus are in their characters quite unlike anything previously known; in the first place, they are all very small, one species, *B. poculum*, being only 8 mm. in total length, while none of the others exceeds 35 mm.; but, most remarkable of all, they unite the characters of Bathycrinus and Rhizocrinus so completely as to leave scarcely any grounds for considering them as distinct genera. This discovery was not news to the present reviewer; for the day after the receipt of Dr. Döderlein's work, his own description of two intermediate species, *Bathycrinus equatorialis* and *B. caribbeus* was published. Rhizocrinus (including, as we now apparently must, Bathycrinus) contains at the present writing fifteen described species, of which nine have been made known during the past year, and there are several additional species now in press; it is very evident that our knowledge of even this comparatively old genus is still extremely rudimentary. Dr. Döderlein's interesting remarks on the shedding of the arms in Rhizocrinus—Bathycrinus I shall consider in detail later.

Isocrinus naresianus, first found by the *Challenger*, was rediscovered by the *Siboga* off the northern end of Celebes, having been previously known only from the Kermadec and the Meangis Islands, and from Fiji, and a new species, *I. siboga*, was discovered near Timor. This last belongs to the group of the genus in which the costals and division series consist of two joints, bound by syzygy, including such species as *I. wyville-thomsoni*, *I. parrae* (of Guérin 1835 = *I. mülleri* of Oersted 1856 of which *I. maclearanus* is merely a variety) and *I. alternicirrus*, to the last of which *I. siboga* is most nearly related, though it possesses the normal arrangement of the cirri. The form *maclearanus*, by the way, did not come from the southwest Atlantic as stated by

Dr. Döderlein, but from the west central Atlantic; moreover, it was first described by Wyville Thomson, and not by Carpenter; also *I. wyville-thomsoni* was first described by Wyville-Thomson, Jeffries's mention of the name being in both cases a pure *nomen nudum*.

The discussion of *Metacrinus* is appropriately begun with an account of the infrabasals of *M. acutus*, which are compared to those of *Millericrinus polydactylus*. Then follow paragraphs on the specific characters of the genus found in the calyx, the arms, and the stem, which last is believed to furnish the most reliable characters. In this conclusion I heartily concur. The stems are considered at some length, and there is an interesting account of the stem growth, a subject which I shall discuss at some length later. Dr. Döderlein believes that, when living on the sea-bottom, the species of *Metacrinus* have very long stems, which are inextricably entangled one with another, forming a sort of mesh-work, from which the younger part of the stem and the crowns stand out; in other words, that the individuals form a sort of crinoid colony, the crowns arising from a maze of stems, and he adduces considerable strong evidence in support of this view. It will interest him to know that I have additional evidence pointing to the same conclusion.

The species of *Metacrinus* obtained by the *Siboga* all fall into that division of the genus in which there are "five radials," two of which are united by syzygy; three new species, *M. acutus*, *M. serratus* and *M. suluensis*, and a new variety, *M. nobilis timorensis*, are described, while that somewhat unhappy word *typica* is used to denote the typical forms of *M. nobilis* and *M. superbus*. *M. acutus* comes from the Ki Islands, and *M. serratus* and *M. suluensis* were found in the Sulu Archipelago. *M. nobilis timorensis*, as its name indicates, occurs near Timor. *M. cingulatus*, previously known from the Ki Islands and the Arafura Sea, was rediscovered at the Ki Islands and at Timor; *M. varians*, from the Kermadec and Meangis Islands, was found at Timor, the Ki Islands, and in the Sulu Archipelago; and a varietal (unnamed) form of *M. superbus* was collected at the Ki Islands. *Metacrinus nobilis* is divided into three varieties, *typica*, *murrayi* and *timorensis*, with somewhat unfortunate nomenclatorial results; for the specific name *murrayi* of Carpenter has precedence over *nobilis* of the same author. Expressing these names as trinomials, we have *Metacrinus mur-*

rayi murrayi, *M. murrayi typica*, and *M. murrayi timorensis*, the *typica* not representing the typical form at all. *Metacrinus murrayi* (to speak with nomenclatorial accuracy), previously known from the Ki Islands and Arafura Sea, was again found at the Ki Islands, and also at Timor.

Perhaps it is wisest to do as Dr. Döderlein has done and recognize by name the various geographical variations of the *Metacrinus* species, but it certainly conjures up a terrible vista of possibilities, for it is difficult to imagine more variable organisms than the species of this genus, according to my experience. I have examined some additional varieties of *M. superbus* from Japan, and a bewildering, though small, series of *M. angulatus* from the same locality, some of which fall into the group with "five radials," and others into that with eight to twelve, while *M. rotundus*, also falling into both groups, is even more variable; and it seems to me that if we once get a good start on the trinomial system in any branch of the recent crinoidea, with the continuance of the present activity in the field, it will not be long before each genus will require a specialist for its elucidation.

Dr. Döderlein is to be congratulated on the results of his study of the *Siboga* collection, and the production of a volume which will long stand as the authoritative work on the stalked crinoids of the East Indian seas, and which not only treats of the stalked crinoids systematically as a class, but suggests many interesting new lines of investigation, and bears throughout the stamp of one who not only has an exhaustive knowledge of the group under consideration, but of many different forms of animal life as well.

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ANIMAL PATHOLOGY

Trypanosome Diseases.—Recent investigations which have been carried out in foreign laboratories with the object of ascertaining the mode of cure for sleeping sickness, and other trypanosome diseases have resulted in demonstrating certain features in the biological conduct of these protozoa towards chemical stimuli which are of extreme interest. Thus far only three

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